

What is claimed is:

1 1. A pulse-type gas concentration measurement
2 system, comprising:

3 a sensor disposed in a specific environment, the
4 sensor having a voltage input element, an
5 output element and a sensing element;

6 a pulse power supply module connected to the voltage
7 input element; and

8 a processing device storing a plurality of chemical
9 matter characteristics signals connected to the
10 output element of the sensor;

11 when the pulse power supply module sends a variable
12 pulse-modulated voltage to the sensor through
13 the voltage input element, the sensor outputs a
14 first signal to the processing device through
15 the output element, and the processing device
16 determines a detection voltage according to the
17 first signal and compares the first signal with
18 the chemical matter characteristics signals to
19 determine composition of the gas and
20 concentration of respective constituents of the
21 gas;

22 when the pulse power supply module sends a square-
23 wave pulse with the detection voltage to the
24 sensor through the voltage input element, the
25 sensor outputs a second signal to the
26 processing device through the output element,
27 and the processing device compares the second
28 signal to the chemical matter characteristics

29 signal to determine the concentration of
30 respective constituents of the gas.

1 2. The pulse-type gas concentration measurement
2 system according to claim 1, wherein the processing
3 device determines an ideal voltage related to a maximum
4 voltage of the first signal from the variable pulse-
5 modulated voltage, and determines the detection voltage
6 as a voltage larger than the ideal voltage.

1 3. The pulse-type gas concentration measurement
2 system according to claim 1, wherein the sensing element
3 comprises a membrane of a metallic oxide.

1 4. The pulse-type gas concentration measurement
2 system according to claim 3, wherein the metallic oxide
3 comprises tin oxide (SnO_2).

1 5. A method of pulse-type gas concentration
2 measurement, comprising the steps of:
3 providing a sensor in a specific environment;
4 sending a variable pulse to the sensor, so that the
5 sensor outputs a first signal corresponding to
6 gas in the specific environment;
7 comparing the first signal with a plurality of
8 chemical matter characteristics signals to
9 determine a first identification result for the
10 gas;
11 determining a detection voltage according to the
12 first signal;
13 sending a square-wave pulse with the detection
14 voltage to the sensor, so that the sensor

15 outputs a second signal corresponding to the
16 gas; and
17 comparing the second signal with a plurality of
18 chemical matter characteristics signals to
19 determine a second identification result for
20 the gas.

1 6. The method of pulse-type gas concentration
2 measurement according to claim 5, wherein the first
3 identification result and the second identification
4 result for the gas respectively comprise the
5 concentration of respective constituents of the gas.

1 7. The method of pulse-type gas concentration
2 measurement according to claim 5, wherein the chemical
3 matter characteristics signals are obtained by:
4 disposing the sensor in a plurality of predetermined
5 chemical matters and sending a variable pulse-
6 modulated voltage to the sensor respectively,
7 so that the sensor outputs each of the chemical
8 matter characteristics signals corresponding to
9 each of the predetermined chemicals; and
10 storing the chemical matter characteristics signals
11 in a database.

1 8. The method of pulse-type gas concentration
2 measurement according to claim 5, wherein the variable
3 pulse is a pulse-modulated voltage.

1 9. The method of pulse-type gas concentration
2 measurement according to claim 5, wherein the first
3 signal comprises a pulse voltage signal.

1 10. The method of pulse-type gas concentration
2 measurement according to claim 9, wherein the step of
3 determining the detection voltage according to the first
4 signal further comprises:

5 determining an ideal voltage related to a maximum
6 voltage of the first signal from the variable
7 pulse; and

8 determining the detection voltage as a voltage
9 larger than the ideal voltage.

1 11. A method of pulse-type gas concentration
2 measurement, comprising the steps of:

3 providing a sensor in a specific environment;

4 sending a variable pulse to the sensor, so that the
5 sensor outputs a first signal corresponding to
6 a plurality of gases in the specific
7 environment;

8 comparing the first signal with a plurality of
9 chemical matter characteristics signals to
10 determine a first identification result for the
11 gases;

12 determining at least one detection voltage according
13 to the first signal, wherein each detection
14 voltage corresponds to one of the gases;

15 sending at least one square-wave pulse with the
16 detection voltage to the sensor, so that the
17 sensor outputs at least one second signal
18 corresponding to the gases; and

19 comparing the second signal with a plurality of
20 chemical matter characteristics signals to

21 determine a second identification result for
22 the gases.

1 12. The method of pulse-type gas concentration
2 measurement according to claim 11, wherein the first
3 identification result for the gases comprises composition
4 of the gases.

1 13. The method of pulse-type gas concentration
2 measurement according to claim 12, wherein the second
3 identification result for the gases comprises
4 concentration of respective constituents of the gases.

1 14. The method of pulse-type gas concentration
2 measurement according to claim 11, wherein the chemical
3 matter characteristics signals are obtained by:

4 disposing the sensor in a plurality of predetermined
5 chemical matter and sending a variable pulse-
6 modulated voltage to the sensor respectively,
7 so that the sensor outputs each of the chemical
8 matter characteristics signals corresponding to
9 each of the predetermined chemicals; and
10 storing the chemical matter characteristics signals
11 in a database.

1 15. The method of pulse-type gas concentration
2 measurement according to claim 11, wherein the variable
3 pulse is a pulse-modulated voltage.

1 16. The method of pulse-type gas concentration
2 measurement according to claim 11, wherein the first
3 signal comprises a pulse voltage signal.

1 17. The method of pulse-type gas concentration
2 measurement according to claim 16, wherein the step of
3 determining at least one detection voltage according to
4 the first signal further comprises:

5 determining at least one ideal voltage related to at

6 least one maximum voltage of the first signal

7 from the variable pulse; and

8 determining each detection voltage as a voltage

9 larger than each ideal voltage.

1